CHAPTER FOUR
'REAL BEDS': MAKING AND SELLING

Introduction

The outcome of the King's Fund Bed project depended on the reception of the specification by certain key groups. Most obviously, for such beds to appear in NHS hospitals, manufacturers had to be willing and able to produce beds meeting the specification, and hospitals had to be willing and able to buy them in sufficient quantity to make their manufacture profitable. This did eventually transpire. By 1974, just under ten thousand King's Fund Beds were being produced and sold, almost entirely to the NHS, each year.[1] This was just under half of the annual new bed requirement. Such beds continue to account for a very substantial proportion of all hospital beds bought in Britain.[2]

Precise figures are difficult to establish, but, as a rough guide, it might be estimated that, since 1974, at least 50% of the beds bought for the NHS have been to the King's Fund Specification. In the light of this,

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[1] AAD/1989/9, Job 15, Report of a meeting at Nesbit-Evans on 9.10.73.

[2] 1998 figures were 'just over 10,000 beds per year'. King's Fund Beds were 'by far the biggest seller by volume'. J. Mitchell et al. *Better Beds for Health Care*, London, King's Fund Publishing, 1998, p.7. The reasons for continuing purchase of an artefact with an established place in the market are not necessarily the same as those which lead to the acquisition of an innovative one, and I shall attempt to account only for the situation up to 1975, when King's Fund Beds were still considered innovative. For a study of the purchase of an innovative medical product, see Stephen Baker `The diffusion of high technology medical innovation: the computed tomography scanner example', *Social Science and Medicine,* 13D, 1979, pp.155-62.

most retrospective assessments of the King's Fund Bed Project regard the resulting specification, and beds produced to it, as having been not only a success but a vindication of the innovative design methods used. But these two issues are complex, and separate. If King's Fund Beds were eventually bought in sufficient quantities to be a commercial success for manufacturers, the question of success for other groups is harder to unravel. Sales figures alone, or numbers in use, do not necessarily equate with 'success' for all groups, especially in a complex, state-funded system such as the NHS where immediate users (however defined) are largely a separate group from those making purchasing decisions, and those making purchasing decisions are not the ultimate keepers of the purse strings. For whom, and why, were King's Fund Beds successful? And what relation did this bear to the methods used in their design?

To begin to answer the first question, the next two chapters explore in more detail how the specification, and beds built to it, fared in the contexts of production and use from the late 1960's to the mid 1970's, focusing in this chapter on manufacture and sales, and in the next on purchase and use in the hospital service. The second question is explicitly addressed in Chapter Six.

Making King's Fund Beds

Aware that commercial viability was essential for the existence of any proposed new hospital bed, Irfon Roberts of the King's Fund Working Party had, from the start of the project, taken care to inform potential manufacturers of their work. Companies which already produced hospital

beds had been consulted in initial enquiries and were sent the Working Party's findings and the draft specification. Shortly after the latter was published Archer and Roberts met with the MOH Supply Division to establish the potential NHS demand for new beds. This was estimated at 25,000 per annum, a figure which the Fund circulated to manufacturers.[3] From this point, Roberts' approaches to companies became more specific. In August 1964 he suggested that any company interested in manufacturing beds to the specification should submit a prototype by 21 January 1965, 'in strictest confidence to the Working Party so that they may indicate whether this is likely to satisfy the specification and warrant further development by the Company'.[4] Forty firms, including fifteen British companies, were contacted. The response was not overwhelming. One British manufacturer, rather missing the point, hoped that 'an attempt was not going to be made to incorporate all the features into one bedstead'.[5] Another asked 'Do we need this expensive universal bed?'[6] Early in 1965, seven British firms still appeared to be interested but several later withdrew. The King's Fund was left in serious dialogue with only a handful of companies.

One, Hoskins and Sewell, wanted to submit their existing square frame hospital bed. Another, Edghill, were 'forced to the decision that costly development cannot be justified to provide a comparatively heavy duty bed which would be priced beyond the reach of available finance for

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[3] A/KE/PJ/17/19, KFWPHB Minutes 15.7.64, Item 47.

[4] A/KE/PJ/17/28 Irfon Roberts to bed manufacturers, 18.8.64.

[5] A/KE/PJ/17/28, Hoskins and Son to Irfon Roberts, 13.7.64.

[6] A/KE/PJ/17/28, D.R. Siddall to Irfon Roberts, 29.12.64.

mass use and therefore we no longer propose producing a prototype.'[7], In October 1965, Vono were said to be 'very near meeting the specification', but their prototype never materialised.[8] It was rumoured at the RCA that manufacturers had privately agreed to boycott the specification, fearing the effect of standardisation on their traditional markets.[9]

In the event it was the West Wirral firm of Nesbit-Evans Ltd. which produced the only approved prototype to the specification, and who finally put the King's Fund Bed into production in July 1967. Even they, however, had not initially considered that beds produced to the specification would be commercially viable, and had been interested in working with the RCA to produce a specialist geriatric bed. A market for the latter seemed a strong possibility given the rapid expansion of the new specialty, but the situation was far from clear. Even senior hospital administrators found it hard to fathom the intentions of planners and the new consultant geriatricians.[10] Was geriatric accommodation to be built within the new

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[7] A/KE/PJ/17/28, Edghill Equipment Ltd to Irfon Roberts, 23.3.65.

[8] A/KE/PJ/17/28, notes of a telephone conversation, Roberts and Howes, 7.10.65.

[9] Interview, Kenneth Agnew, 22.6.00. The bed-making trade was apparently no stranger to cartel-like practices. Minutes of a meeting of the Metal Bedstead Manufacturers Association (undated but probably c.1923) included an item on 'The Birmingham Alliance. . . . its object was undoubtedly to maintain if not to raise selling prices . . . Mr Jones stated that no published documents existed concerning the termination of the alliance. He was of the opinion that there were no records of the transactions of the Alliance. . . He further intimated that he preferred not to discuss the question in detail. As regards the existence of Alliances in other trades he thought that Bedstead Mount manufacturers and the Tube Trade generally had had some similar arrangements but he could furnish no particulars concerning them.' Item 7, undated Minutes, LAB 83/1042. The Metal Bedstead Association ceased to exist on 31.3.60 'in compliance with an order by the Registrar of Restrictive Practices.' It became the Metal Bedstead Export Group. Letter, Dixon Hopkinson and Co. to Turner, Ministry of Labour, 5.4.60. LAB 83/1042.

[10] A Hospital Group Secretary wrote: 'We were bewildered. . . we didn't understand what a geriatric patient was and so we had no means of knowing whether such patients were being well or ill-treated, much less how the district general could make things so much better.' Anon., 'Planning and Reality', *Hospital Management*, July 1967, pp.354-355. On the creation of geriatrics as a specialty see Rivett, *From Cradle to Grave*, pp.75-76,157-158,

District General Hospitals, or in separate specialist units? Would the expansion of specialist geriatrics (which included home assessment visits and day care centres) mean more, or fewer, elderly patients being cared for in their own homes? Come to that, what *was* a geriatric patient? It was common knowledge that the average age of hospital inpatients was rising all the time, and many were in their sixties, seventies and eighties. Was everyone over, say, sixty five, now a geriatric patient?

The definition and distribution of geriatric patients influenced whether or not it was worth producing specialist beds, and of what kind. Nursing geriatric patients in the community required different types of beds, mainly beds that local authorities could afford to use in residential care, or could get in and out of patients' homes, although the wealthier end of the private market might sustain expensive, electrically powered beds. In an uncertain situation, the RCA were able to persuade Nesbit-Evans that the King's Fund Bed was the best bet. They had every reason to do so, for without an interested manufacturer, the project was unlikely to have gone further.

The lukewarm response of many hospital bed manufacturers was perhaps understandable. The industry was not large (an annual turnover of £1 million was estimated circa 1970), the constituent firms being mainly light metalworkers.[11] Of the largest, Evered and Co of Birmingham had been domestic metal bed makers. Siddall and Hilton of Halifax were wire

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230. The first consultant geriatrician, Tom Wilson, was appointed in Cornwall in 1948. Initially, 'geriatric wards tended to be occupied by people over 75'. Local authority provision for residential geriatric care rose by a third between 1961 and 1966. The number of day care centres rose from 12 in 1960 to 120 in 1970.

[11] AAD/1989/9, Box 30, Kenneth Agnew, lecture notes to Hatfield College of Technology, 7.10.75.

drawers who made (among other things) bed springs.[12] Smaller concerns also existed, some making only a single type of bed, others diversifying widely in order to stay solvent, like much of the medical equipment industry.[13] One hospital bed manufacturer displayed a card at trade exhibitions stating 'boiler repairs also undertaken'. Although publicly the RCA team expressed the view that producing beds to the specification and adopting 'production line-type' techniques was well within the capabilities of existing manufacturers, Kenneth Agnew subsequently wrote of the hospital equipment industry at that time that it was 'not an industry but the shattered remains of a jobbing ironmongery business which grew and prospered in the years of serenity'. This he crossed out and replaced with 'in the fifties it became a primitive craft - it is now best described as a horrible mess.' 'We believe', he continued, `that some well known names in the hospital field are either bankrupt or are hiding their losses in the accounts of the engineering companies which have taken them over.'[14]

'Jobbing ironmongery' was perhaps a little harsh. Some of the economic realities and traditional practices of the bed making trade made their rather lukewarm response to the specification understandable. 'We have given considerable thought to these suggestions, some of which tend to be rather revolutionary in the Hospital Bedstead World' wrote Evered and Co. on receiving the specification.[15] The RCA prototype got an even

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[12]Siddall & Hilton Ltd, *100 years of Service*, pamphlet, 1998. Hoskins and Sewell of Birmingham were the other major bed manufacturers.

[13]One Company known to the King's Fund had gone into making 'car washing equipment and plastic lobster pots'. A/KE//PJ/17/1, Notes of a meeting with Barnet Medical Developments Ltd., 25.6.63.

[14]AAD/1989/9, Job 30, Kenneth Agnew, lecture notes, 'Specification, selection and evaluation of hospital equipment', undated.

[15]A/KE/PJ/17/28 Evered and Co. to Irfon Roberts, 7.12.65.

less positive response. Some manufacturers were little short of incredulous when they saw it. It appeared to several that the rarefied air of a London art school had produced an artefact ill-suited to the traditional tools and techniques of the bed-making trade.[16] Agnew's design could hardly be produced using the existing resources of these firms. Almost all, for example, were not sheet metal workers but dealt with metal pipe. The weight loads in Agnew's design necessitated square section struts made of folded sheet steel which could not be bent in the way that metal pipe could. Nor were the traditional brazed joints used on metal pipe in bed making sufficiently strong. Welding was necessary.

Beyond these practical problems of manufacture, which required considerable outlay in tooling if they were to be solved, lay the question of producing a design to the specification. At this period firms of this kind rarely employed professional designers. Siddall and Hilton, for example, had 'only one draughtsman'.[17] When they did decide to investigate producing a design to the specification they were obliged to 'send to London' for one, employing a design company to provide it.[18] It duly arrived, but 'nobody greatly took to it' and it was several years before this company revisited the idea of producing a King's Fund Bed. In the light of these factors it is perhaps not surprising that, of the rather few manufacturers interested in gaining King's Fund approval for their designs, all except Nesbit-Evans initially hoped to gain it for existing models, rather

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[16]Interview, Kenneth Crisp, 20.7.00.

[17]Interview, Peter Siddall, 19.6.00.

[18]Possibly that owned by Anthony Smallhorn. There were very few independent consultancies involved with engineering design at this time. Interview, Kenneth Agnew, 22.6.00.

than fund new development work. [19]

Nesbit Evans, however, by this time knew enough of the project to understand that this was not what the King's Fund and, perhaps even more importantly, the RCA, had in mind. It would hardly have proved a fitting conclusion to the expensive and time consuming exercise to find that there was already a bedstead on the market which met the new specification. New work was certainly called for, and once Nesbit-Evans had shown themselves seriously interested, they received every support from the King's Fund Working Party and the RCA. The interests of all three coincided: they would be served by the production and sale of King's Fund Beds in quantity.

Nesbit-Evans was a medium sized company with perhaps around 20% of the hospital bed market in the early 1960's. The Director most involved with the King' Fund Bed project was Toby Weston, a former submarine commander who 'knew about man management'.[20] Ex-public school and ex-Royal Navy, Weston moved with confidence in London circles and, as a matter of policy, kept in closest possible touch with the RCA and the Ministry of Health once he got to know of the project. The firm was already considering various changes which made the King's Fund Bed potentially attractive. In particular, Weston wanted to close its foundry, used to make cast corners in traditional bed-making but difficult to incorporate into more modern organisation of the production line type.

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[19] Evered, for example, had just spent eighteen months developing their 'Adaptabed'. It already incorporated several features of the King's Fund specification. They had also put considerable resources into getting the first electrically-powered hospital bed in Britain, the 'Electralift', onto the market.

[20] Interview, Kenneth Agnew, 22.6.00.

[21]Welding, the alternative to casting, was becoming less skilled and more available. In addition, unlike those in Birmingham, the factory was not highly unionised, which Weston considered made for less resistance to changes in work practices.[22] With an attitude noticeably different to that of other manufacturers, Nesbit-Evans were the only commercial firm to produce a prototype for inspection by the Working Party that met the specification. This was within a month of the completion of the Chase Farm trials of the RCA prototype. They pressed on, in March 1967, with similar ward trials of twelve of these beds at the Royal Berkshire Hospital, Reading, using protocols modelled on the Chase Farm trials.[23] On the same day that the final specification for the King's Fund General Purpose Bedstead was published in July 1967, Nesbit-Evans was in a position to mail a glossy, silver-covered promotional brochure to every hospital in England and Wales, advertising the availability of the 'Nesbit-Evans King's Fund Bed'.[24]

They had achieved this enviable position largely through a new working relationship with the RCA. From 1965 they had hired the Dept of Design Research as paid consultants. This gave them access to the

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[21]Foundries produced dirt in the atmosphere, precluding, for example, painting or coating products in their vicinity. Welding, the alternative to casting, was becoming a less skilled task and therefore easier, and cheaper, to utilise.

[22]Interview, Toby Weston, 25.11.98. The Metal Bedstead Workers Union was disbanded c.1960. Most of the membership subsequently joined the National Society of Metal Mechanics. LAB 83/1042, Dixon Hopkinson and Co to Young, 1.7.61.

[23]Nesbit-Evans had wished to replace the beds used in the Chase Farm trials with twenty of their own design, immediately the RCA bed trials were concluded. The King's Fund were not keen, in view of the prolonged disruption to the hospital and the risk of setting precedents over trials of commercial equipment.

[24]A/KE/PJ/17/19 KFWPHB Minutes, 28.10.66, Item 178. Nesbit-Evans secured the Fund's agreement that the bed should be marketed under this name on the basis that other firms who succeeded in producing beds to the specification would be allowed to do the same.

accumulated experience of every stage of the project, and the services of Kenneth Agnew, designer of the RCA's prototype bed. The first Nesbit-Evans King's Fund Bed was a new design by Agnew which incorporated information derived from the Chase Farm and Reading ward trials. The arrangement was entirely above board, but it caused resentment in the industry and some persistent misunderstandings. The designer of Evered's King's Fund Bed was still under the impression, thirty years later, that Nesbit Evans had 'bought the King's Fund design'.[25] This was not the case. The Fund took care to put details of the prototype design in the public domain, in order to prevent any one firm patenting it, and Agnew's prototype was made freely available to any manufacturer who wished to examine it. But the close working relationship which Nesbit-Evans prudently acquired was certainly advantageous to them. It lasted over several years and several projects, and extended to the RCA occasionally advising Nesbit Evans on sales strategy, or pooling their knowledge of competitors' intentions.[26] Furthermore, the fact that the Nesbit-Evans bed was the only one meeting the specification when it was published, meant that promotion of the specification amounted to promotion of the Nesbit-Evans bed. This situation did not escape the notice of competitors. After attending a conference held to launch the specification at the King's Fund, a director of Evered wrote to the Director of Hospital Services at the Fund:

> I consider we have been put in a most impossible situation by the King's

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[25]Interview, Kenneth Crisp, 20.7.00.

[26]For example, Archer to Weston, 24.10.68, 'In the course of conversation on another matter, I learned that the other bedstead manufacturers have quickened their interest in the general purpose bedstead specification as a result of the Ministry circular, and there is now a very much higher probability of people coming in with new designs than had been the case before. If you have not already done so, I suggest that now would be the tactical moment . . .to introduce improved discounts or any such other incentives to strengthen your position.' AAD/1989/9, Job 15.

> Fund and the MOH in this matter. Both organisations are now backing our competitor and supplimenting(sic) his sales efforts with such official enthusiasm that I fail to see how our own version of a Specification bed could ever compete . . . this appears to be the encouragement of a monopoly situation.[27]

But the King's Fund's position was understandable. In their view they had spent a large sum of money to arrive at a specification which they hoped would be widely adopted. They had encouraged manufacturers to produce beds to it and offered equal assistance to any who were interested. Since only one manufacturer had produced a King's Fund Bed, inevitably it was the only available embodiment, apart from the twenty copies of the RCA's prototype.[28] Throughout the project they were careful not to promote any particular manufacturer. But after several years of close cooperation between Irfon Roberts, the RCA, Toby Weston of Nesbit-Evans and, to a lesser but extremely important extent, Hunt, the Controller of Supplies at the Ministry, loyalties and common interests were strong. They were reflected in an early draft which Roberts prepared for the Working Party on 'Methods of Production and Supply'. It included discussion of 'the three main types of manufacturer'. They were:

> 1. The bedstead man who has supported the Working Party inquiry and designed a bedstead to its specification. 2. The bedstead man who does not appear to have supported the enquiry and has not attempted to design a bedstead to the specification. 3. The manufacturer of other products who has not hitherto made hospital bedsteads but who is interested in doing so. The Working Party would consider the Ministry justified in paying greater attention to

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[27] A/KE/PJ/17/20 Wilson to Hardie, 16.10.67.

[28] After modification to the pedal and castors, four of these beds remained at Chase Farm Hospital, ten went to Roehampton Hospital and five were kept by the Ministry of Health 'for exhibition and development'. The remaining bed went to Russell Grant, the physical medicine consultant on the Working Party who was developing his own hospital bed, for trials with a powered unit.

the interests of the first and third type than to the second.[29]

This was something Nesbit-Evans had been hoping for. Weston wrote to Roberts:

> I still hope some exception may be made for us. We have after all played ball - our successful work does, we feel, entitle us to some advantage over others who have not run so well.[30]

The Working Party agreed, and noted with approval that the MOH would consider what might be done.[31] What the Ministry did was to fund the Reading trials of Nesbit-Evans' King's Fund Bed and underwrite a single large order for 2000 beds needed to perfect manufacture and obtain realistic cost estimates. After a visit to the Nesbit-Evans factory in July 1967, Kenneth Agnew wrote 'The new factory is crammed with King's Fund Beds - I have suddenly got the impression from this visit that there are no more serious problems of any kind'.[32] By October 1967, after three months of sales, some 2000 Nesbit-Evans King's Fund Beds had been delivered; less than a tenth of the NHS annual requirement, but a sizeable number for a new, and expensive, hospital bed.

The first commercial version of the King's Fund Bed differed from the 'research tool' designed by Kenneth Agnew. Whereas Agnew's brief for this had been to design an artefact conforming to the specification in terms

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[29] AAD/1989/9, Job 13, Design of Hospital Bedsteads, Methods of Production and Supply, 'Draft A', undated.

[30] A/KE/PJ/17/28, Toby Weston to Irfon Roberts, 4.11.65.

[31] A/KE/PJ/17/19 KFWPHB Minutes, 5.5.65.

[32] 'the one possible exception, which they will not admit, is condensation on the steel deck,' he continued. Kenneth Agnew, Report on a meeting at Nesbit-Evans Factory on 12.7.67, 13.7.67, AAD/1989/9, Job 15.

of form and function for the purposes of the trials, the design for Nesbit-Evans had, in addition to this, to be produced at a reasonable cost, sell in large numbers, and perform reliably enough over time. In short, a marketable product rather than a 'research tool' was required. The new design took into account of an aspect of the Chase Farm trials with which the RCA had been somewhat less concerned: mechanical reliability. The RCA team had been interested in the Chase Farm trials as indicative of the wider implications and, they hoped, benefits of the King's Fund Bed, were it to be installed in general wards. Obtaining evidence which would promote acceptance of the specification was clearly of paramount importance. The trials were structured to look, for example, for effects on length of hospital stay, or staff sick leave. Trialling a specification and not a product, they had specifically eliminated, as far as was possible, issues of mechanical failure. To minimise the time when an artefact performing to the specification was not in existence 24-hour cover by engineers was provided. Nesbit-Evans had more practical concerns. Furnished with the trial results, Agnew focused on the back rest adjustment, which was considered awkward to use, and improving the function of the jacks, which failed too often. By July 1967 it was agreed that the RCA's work on the bed would cease after some further attention to the backrest problem, the design of a brake for new castors and of buffers for the bed. Nesbit-Evans took over the problem of the jacks.

The resulting bed was rather different from the prototype. The pull-out backrest adjustment had been judged awkward and difficult to operate. Not only the mechanism, but the entire structure was changed. The large, solid backrest (originally an aluminium/polystyrene sandwich but copied by Scottish Aviation in plywood) with petersham ribbon pillow straps, was

replaced with a more conventional tubular steel structure. The additional, alternative means of supporting the patient's back, 'the rising base' that had been the subject of so much theoretical debate during the RCA design process, was abandoned in Nesbit-Evans first versions on grounds of cost. Agnew changed the arrangement whereby the tilt mechanism rested inside the height adjustment mechanism and added a separate tilt box. Other alterations were made to make the prototype better suited to manufacture with Nesbit-Evans existing resources. Although they were, as noted above, keen to eliminate casting from the production process, they were not 'about to become sheet metal workers', and other aspects of Agnew's design were altered accordingly. The backrest had already reverted to the more traditional tubular metal bars. The mattress platform, sheet steel stretched over a frame in the prototype, became a frame into which a steel sheet was dropped. Throughout, reducing the unit cost was paramount. At £140, Agnew's design would have seemed well beyond the means of most NHS hospitals. Nesbit-Evans were able to market the new design at £75, with safety sides £15 extra. This was still two to three times more than hospitals were accustomed to paying.

Selling King's Fund Beds

King's Fund Beds posed other problems besides how to manufacture them. From the aspect of stock movement, they were very heavy, and bulky. This ruled out rail travel, and Nesbit-Evans had to devise new container lorries. At first they charged far-flung hospitals, such as those in the north of Scotland, a supplement for carriage, so they abaondoned the

practice. Storage was a serious problem when hospitals changed acceptance dates for orders, as they frequently did. Despite every assistance from the King's Fund, the beds were, for the first year or two, very hard to sell.[33] Notwithstanding the intention that whole wards should be furnished with them, it is clear that at this period they were often bought singly, or in small numbers. A King's Fund Bed was sometimes presented to hospitals by local charities in the way that other expensive equipment beyond their means was donated. The Wolverhampton Musical Comedy Society presented one to the matron of the Wolverhampton Eye Infirmary at their annual dinner in January 1968.[34] The Fund itself paid for at least one King's Fund bed, and the Working Party discussed whether grants should be available to hospitals wishing to purchase them.[35] This does not appear to have transpired, but the Fund continued to promote the bed in many other ways. Irfon Roberts spoke tirelessly to meetings of hospital supplies officers and administrators, often arranging for an example of the Nesbit Evans King's Fund Bed to be on show.[36] A powerful force in the London hospital world, not least financially, the Fund inspired respect, and loyalty. Cecily Saunders, who had been given the land on which to build St Christopher's Hospice by the King's Fund, was shown the new beds by them. She subsequently wrote apologetically that she had wanted to use them at St Christopher's 'in view of the help she had had from the fund but

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[33]Interview, Toby Weston, 25.11.98. It was estimated in 1970 that there were 'about 10,000 beds in service after three years production' AAD/1989/9, Job 15, Agnew to Ehlert, 16.11.70.

[34]Wolverhampton Express & Star, January 19, 1968.

[35]A/KE/PJ/17/19 KFWPHB Minutes, 6.7.66, Item 159e.

[36]Ibid., item 159c.

had been unable to do so (ironically because they proved too wide to go through the doorways).

The King's Fund had also recently employed a Public Relations Officer, who rapidly became involved with the project. A conference entitled *Design of Hospital Bedsteads* had been held at the Hospital Centre in September 1967 to launch the recently published specification. This served as a venue for the display of the Nesbit-Evans King's Fund Bed to nearly one hundred specially invited guests from the hospital service, who were addressed by Irfon Roberts, Bruce Archer and F.R. Howes of the MOH. Films of the Chase Farm trials were shown and a talk given by the charge nurse from the Royal Berkshire Hospital on whose ward the Nesbit-Evans bed had been trialled. Indeed it seems that there was almost a situation of 'overkill'. 'This is the long story of a long bed, and it has been told for so long that one has almost forgotten when it started . . . one really wondered what more there was to be said on the subject' wrote the journalist from the *Nursing Mirror*. 'To tell the truth', he continued, 'there wasn't a great deal but it brightened in the manner of telling . . . it revived interest which, in many, the passing of the years must have left a bit limp'.[37] Observers at this Conference, although quite impressed by the Nesbit Evans bed on show, clearly did not expect to see many examples of it on wards in the near future.

Whatever the merits of the King's Fund Bed, this would probably have proved a likely outcome. Within only a few years, however, wards full of King's Fund Beds became a more frequent sight in British hospitals. A rapid upturn in sales occurred which had rather less to do with promotion

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[37]C. Harcourt Kitchin, 'The perfect bed?', *Nursing Mirror*, October 13, 1967, pp.37 and 44.

by the King's Fund or the manufacturers than with a decision by the DHSS. In 1969 they issued a circular allowing the purchase of the bed on central contract, and took on the assessment of new designs intended to fulfil the specification. This marked the culmination of a two year period following issue of the specification during which cautious approval from the Ministry turned to more wholehearted endorsement. Although they had accepted the specification 'in principle' from the outset (it would have been hard to do otherwise, since the Controller of Supplies sat on the Working Party), the economics of the new beds made the Ministry nervous. It was one thing to be seen to be supporting trials leading to equipment standards, particularly if the Public Accounts Committee were at your heels, but quite another to encourage hospitals to spend roughly twice the sum stipulated in the Ministry's own Equipment Notes for the purchase of beds. Their initial response had been cautious:

> While in general . . . our medical and nursing advisers accept the desirability of the features described in the specification the Department would not at this stage wish to be committed to the acceptance of the specification as a standard provision for the majority of patients in general hospitals.[38]

'More work on prototypes' and 'study of economics' was needed. Furthermore, there had been the issue of the initial specified bed length. At seven feet, this was designed to accommodate the taller male patient. 'Given the general preponderance of female patients (55/45 percent) in acute and semi-acute wards . . . too much weight was being given to the comfort requirements of a small proportion of males.' In the Building Notes issued for guidance by the Ministry, the more usual bed length of six foot

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[38] A/KE/PJ/17/17 'MOH comments on 64/250'.

six inches had been used to calculate ward floor areas. A simple sum demonstrated that an extra six inches of bed space would increase the cost of hospital building by 1%, a huge figure given the scale of the Ten Year Plan. Representing the MOH at the launch conference, Howes' speech was measured in tone. The Nursing Times summarised his comments as follows:

> No additional Exchequer funds could be made available, so those who wanted the new bed recommended by the King's Fund must either eat into their capital programme or make economies elsewhere. Nobody really knew what percentage of all the beds should be replaced by new beds. The most useful feature of the new bed was its adjustable height but this was probably the most expensive part. It also required a review of the Equipment(sic) Note for wards because it was four inches longer than the ordinary bed; it could, however, be accommodated in the Ministry's modular ward, but guidance about curtains, position in wards, as well as training staff to use the full facilities of the new bed and the establishment of new procedures, would be needed.'[39]

Pressed about money, Howes

> admitted the Ministry was trying hard to give guidance. They might be able at least to say when the bed was *not* necessary, and there still remained the question of an improved but simpler bed . . . the price was already less than had been feared.'[40]

The Ministry hoped to give guidance by Christmas. In the meantime individual applications would be considered. The Ministry said much the same thing in its formal response to the specification in a letter to RHBs on 11 July 1967. The subsequent months saw frequent liaison between

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[39]'Design of Hospital Bedsteads', *Nursing Times*, October 6, 1967, pp.1351-1352: 1351. The speech was widely reported in other hospital journals. See for example 'Design of Hospital Bedsteads: more chapters in a long story of endeavour', *Hospital Management*, November 1967, pp.536-541. The full text is in 'Design of Hospital Bedsteads', Report of a Conference held at the Hospital Centre, 28.9.67, A/KE/PJ/17/ 28.

[40]Ibid.

Roberts and Howes of Supplies Division. I shall return to the content of these discussions in Chapter Six. In 1968 the MOH issued a circular to all RHBs, HMCs and Boards of Governors, and in 1969 a decision by the DHSS allowed purchase of the King's Fund Bed on central contract.

For the commercial production of the bed, the DHSS circular was a turning point. Nesbit-Evans secured a commanding place in the rapidly enlarged market. In the first three years of production (1967-70) they had sold, on average, just over two thousand King's Fund Beds per year, approximately ten percent of the estimated NHS annual requirement. In the financial year ending March 1974 they produced just under 10,000 full King's Fund Bed Units at a value of approximately £800,000, almost half of the total annual new bed requirement for the NHS. In the Summer of 1973 they had achieved the closure of their foundry and a change to totally welded construction. By October that year, production of King's Fund Beds was at the maximum capacity of their factory and workforce.[41]
It was in this five year period, 1969 to 1974, that other companies decided they too could sell King's Fund beds, and would therefore make the considerable changes needed in their production techniques. Evered, Hoskins and Sewell, and Siddall and Hilton all began to make beds to the specification in the early 1970s. The issue was not now whether to make beds to the specification, but how to sell more than competitors.

Nesbit-Evans, not intending to alter their original hard-won design, adopted strategies of increasing reliability and holding prices. In their Mark III bed, the hydraulic jack was replaced with a mechanical one, which they guaranteed for ten years 'hopeful it would keep their position in the rat race

[41]Report of a meeting at Nesbit-Evans on 9.10.73, 12.10.73, AAD/1989/9, Job 15.

which is now becoming rather more intensive as both of our esteemed competitors have decided to repeat last years prices in an attempt to drag us down.'[42] This was the result of work by a motor industry engineer, John Croxton. Croxton was also considering an electric King's Fund Bed and a 'hand wound' King's Fund Bed (reverting to the older 'worm screw' method of altering bed height). Nesbit-Evans also pursued several of the facilities not included in the specification, such as electric operation, and patient operated controls. Evered (now trading under the name of their parent company, Ellisons) introduced their King's Fund Bed in 1970. Ironically, given the extensive exercise carried out by the RCA team, a later version of this bed was advertised as 'the Nurse-built Hospital Bed' and said to incorporate 'improvements and innovations suggested by hospital nursing staff compiled over four years' while retaining 'the best features of the original King's Fund Bed'.[43] But one way in which this bed differed was that it in fact addressed problems *beyond* the direct use of the bed by the nurse. The overall weight was reduced by more than 50lb, and it formed part of their 'Unicorn' range, based on Unit Construction - 'an answer to the cost conscious seventies'.

Ellisons followed it in 1975 with the 'Kingstyle', 'the economy foot-operated variable height bed with the flexibility that enables you to select a bed specification to suit individual nursing requirements and financial budgets'.[44] The 'Kingstyle', although offering variable height, quietly

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[42]AAD/1989/9, Job 15, Toby Weston to Kenneth Agnew, 8.5.72. Advertisement, *British Hospital and Social Service Journal*, November 15, 1975, p.2552.

[43]Ellison KF75 - The 'Nurse-built' hospital bed. *Health and Social Service Journal*, January 25,1975, p.169. There had not, apparently been any formal consultation exercise. Interview, Kenneth Crisp, 20.7.00.

[44]*Health and Social Service Journal*, December 6, 1965, p.2693.

dropped the issue of tilt. The Kingstyle did not, in fact, meet the specification, and during the 1970's other manufacturers produced beds which were 'like' the King's Fund bed but did not qualify for the epithet. If, in 1967, maximum impact on the market could be had by launching a new bed endorsed by the King's Fund and with the benefits of the Fund's reputation and publicity machine, in subsequent years a connection, by means of design, name or advertisement, with the King's Fund bed was retained or utilised for hospital beds coming onto the market which did not fulfil the specification in its entirety. There was little the King's Fund could do about attempts to associate non-specification beds with their name. From very early on, firms had made it known in advertisements that their beds 'incorporated many features of the King's Fund specification'. Manufacturers continued to use this as a selling point well into the 1970's and not necessarily only for general purpose beds. A water bed for flotation therapy was advertised as 'incorporating in the construction of the bed frame several features which meet the King's Fund Specification for hospital beds'[45] In one major respect, deviation from the specification had been officially sanctioned. Not all those involved had been convinced that height adjustment was necessary for so large a proportion of general purpose beds. The MOH's initial response in 1967 had said as much, and the DHSS central contracting arrangements provided for type 1 and type 2 King's Fund Beds. The existence of standard specifications for beds was probably of more importance to the Ministry than whether beds on the

[45] In 1970, for example, Masterpeace products were advertising that their new variable height/tilt bed, hydraulically operated with pedal, would be 'under £60 pounds' and incorporated 'many of the recommendations made by the King's Fund Working Party on Hospital Beds.' *British Hospital Journal and Social Service Review*, June 12 1970, p.1109. The waterbed advertisement appeared in *Health and Social Service Journal*, February 8, 1975, p.285.

wards went up and down, particularly if the high price of such beds proved a deterrent to purchasers.

And sales were more important to manufacturers. By 1972, Nesbit Evans were working on 'potential' King's Fund Beds, or 'poor man's King's Fund Beds' as they and the RCA called them unofficially. These consisted of bedsteads which at a later date could be fitted with what Nesbit-Evans called the 'King's Fund Capsule', the hydraulically powered height and tilt adjustment mechanism. A 'very poor man's King's Fund Bed was even proposed, with a 'local ball screw, full King's Fund Weight and an undercarriage like type B'.[46] In a continuation of the process which had begun within Nesbit-Evans, manufacturers had to balance meeting the specification with meeting market forces. In Archer's method, involving rigorous calculation of the interdependency of factors, 'partial' fulfilment of the specification was, logically, not an option. Such beds were not an outcome of a logical, abstract method, but the result of social processes, such as market forces and Ministry policy.

[46]AAD/1989/9, Job 15, John Croxton, 7.4.72.